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Made to Measure: The Tape Measure and the Construction of the Ideal American, 1800-1939

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Made to Measure: The Tape Measure and the Construction of the Ideal American, 1800-1939

by

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Dedication

To all those who have ever felt that they didn’t measure up

Acknowledgements

It was a curious experience to write this report between January 2020 and August 2020. The extraordinary and tragic circumstances of our current moment made it easy to question how important this work actually is; as it stands, this report only exists in its current form because of the kind words and community of many.

I'd first like to thank Dr. Janet Davis and Dr. Jan Todd, the supervisors of this report. Their check-ins and feedback proved invaluable, and I'd like to recognize their incredible experience, intelligence, and kindness. This report would not exist without their contributions.

I would also be remiss if I didn't mention the wonderful academic communities I've had the good fortune to be a part of, both in the American Studies department and in the Kinesiology department. In a difficult time that has ushered in necessary conversations, I appreciate that these conversations have not been mere lip service.

Always, but in the last year more than ever, I'd like to thank my family for their enduring love and support. To my parents and brother especially, but also to my extended family, these uncertain times have finally allowed me to appreciate you as you have always deserved to be loved and appreciated. Love you, miss you.

And lastly a thanks to Janet Reinschmidt. I can truly say that 2020, for as awful as it has conspired to be, will always be a year that I remember fondly when I think of you. Thank you for listening to me talk about tape measures, thank you for your love and laughter, and thank you for always helping me find the words.

Abstract

Made to Measure: The Tape Measure and the Construction of the Ideal American, 1800-1939

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Today, most Americans use the tape measure to track children's height or to find measurements for clothing. In this report, I trace the history of the tape measure from its invention by English tailors in the early 1800s through its uses by racial scientists, bodybuilders, performers, and average Americans attempting to validate their racial and gender-coded identities. I argue that the tape measure is an incredibly important artifact of the push for standardization of the human body that accelerated between the mid-1800s through 1939. As an object that served white supremacist regimes and allowed for the collapse of objective measurement into subjective social implications of superiority, the tape measure can be considered a haunted object in line with hauntology. In this way, the tape measure serves as reminder of not only the violent introduction of standardization that perpetuated existing racist, sexist, and ableist attitudes and policies,

but a suggestion of a lost future and how modernity may have preceded without standardization, the road not taken.

This paper is one perspective on a phenomenon that incorporated many other tools and scales for its purposes; the scale, the IQ test, the Kinsey scale, etc. all served the purpose of quantifying aspects of human experience and being in order to establish norms and perpetuate echelons of worthiness. The central thrust of this paper ends in 1939, with the first meaningful survey of American women's measurements in order to establish standardized clothing styles. However, the paper obviously also ends suggesting the start of World War II and some of the most profound consequences of eugenic thought entrenched and legitimized by "objective" scientific measurement of human worth and evolution.

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Introduction

When Leonardo da Vinci sketched his ideal, mathematically proportional Vitruvian man, he incorporated measurements suggested by the Roman architect and military engineer Vitruvius—"four fingers make one palm, and four palms make one foot…and twenty-four palms make a man; and these measures are those of his buildings."[1] Before the tape measure and the widespread application of standardized measurement *to* the human body, many societies employed the human body as itself a regular tool of measurement, of approximating and making sense of the world.[2] Even today, the imperial system of measurement uses "feet," a measurement originally based on the size of a human (usually male) foot.[3] The convenience of carrying at all times a versatile instrument of measurement—the human body providing a foot, a finger, a span between one's outstretched arms, and more—largely outweighed the slight difference in measurements that naturally arose due to the variation between bodies.[4] Many Renaissance thinkers and artists broke with this variation to pursue "ideal" measurements and proportions that provided mathematical proofs for human beauty and strength, that

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[1] Toby Lester, *Da Vinci's Ghost: The Untold Story of the World's Most Famous Drawing* (London: Profile Books, 2011), 85.

[2] Mark H. Stone, "The Cubit: A History and Measurement Commentary," *Journal of Anthropology* (2014), 1-11. See also Frank Zöllner, "Anthropomorphism: From Vitruvius to Neufert, from Human Measurement to the Module of Fascism," *Images of the Body in Architecture: Anthropology and Built Space,* ed. Kirsten Wagner and Jasper Cepl, (Tübingen: Berlin, 2014), 50-51.

[3] Jeffrey Huw Williams, *Defining and Measuring Nature: The Make of All Things* (San Rafael, California: Morgan & Claypool Publishers, 2014), 8-10. See also Stone, "The Cubit," 4.

[4] William Aylward, "Linear Measure and Geometry in Roman Architectural Planning with Specific Reference to the Colonnaded *Oecus* at the Villa at Poggio Gramignano," *A Roman Villa and a Late Roman Infant Cemetery: Excavation at Poggio Gramignano Luugnano in Teverina,* ed. Noelle and David Soren (Rome: L'Erma di Bretschneider, 1999), 181-190. See also Nora E. Scott, "Egyptian Cubit Rods," *The Metropolitan Museum of Art Bulletin* new series vol. 1, no. 1 (Summer 1942), 70.

made the human body a wonder by and for measurement.[5] Nonetheless, this impulse to quantify the ideal human form, as with the Vitruvian man, took on sinister implications when nineteenth-century racial scientists and eugenicists used measurements in an attempt to catalog races and create scientific and political policies that favored certain people over others.[6]

In the United States of the late 1800s and early 1900s, anxieties over shifting gender roles and shifting immigration patterns led to scientific examinations of who the ideal American was and what the ideal American body looked like. The tape measure became a key instrument of the supposedly objective, scientific study of race, disability, and gender in the United States. Phrenologists and eugenicists, among other pseudoscientists, used the steel tape measure to make arguments about who deserved to exist, and their arguments about biological inferiority upheld preexisting racist and ableist attitudes. In a February 1921 article for *Good Housekeeping* titled "Whose Country Is This?", just elected Vice President Calvin Coolidge stated that "biological laws tell us that certain divergent people will not mix or blend [into Americans]…quality of mind and body suggests that observance of ethnic law is as great a necessity to a nation as immigration law."[7] At the same moment that the tape measure helped uphold racist immigration policies, male strongmen and bodybuilders used the tape measure to

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[5] David Summers, *The Judgement of Sense: Renaissance Naturalism and the Rise of Aesthetics* (Cambridge: Cambridge University Press, 1987), 156, 169. See also Albrecht Dürer, *Four Books on Human Proportion* (Nuremberg: Hieronymus Andrae, 1532-1534).

[6] Stephen Jay Gould, *The Mismeasure of Man* (New York: W.W. Norton & Company, 1981).

[7] Calvin Coolidge, "Whose Country Is This?" *Good Housekeeping* (New York: International Magazine Company, February 1921), 14.

quantify their masculinity and ableness; women performers of all stripes (and women in general) used the tape measure to quantify their femininity and, at times, to challenge and shape the bounds of what the ideal woman looked like. The tape measure became a means to enforce and reify concepts of race, disability, and gender that ultimately supported white supremacist visions of who Americans were and what they should look like.

The tape measure originated from various measuring sticks, rods, and rulers that were used in even the earliest human civilizations.[8] The key feature of the tape measure even today is its flexibility, its ability to wind around the human body and record measurements of a human waist, calf, skull, etc. Several English tailors claimed to have invented the tape measure in the early 1800s, making it impossible to credit the tape measure's invention to any one person.[9] It does, however, suggest the tape measure as a tool that many tailors needed all at once, the product of a groundswell rather than a singular inspiration. As one *Taylor's Guide* of the era suggests, the tape measure arose to support a tide of scientific rationalism in tailoring:

> Science is the knowledge of things in their causes…the blind hypothesis of certainty…of Cutting Cloths, when the least Error of appropriating or uniting the most trifling separation of any of the Parts, would overturn our boasted System...till [we] arrive at the beautiful Temple of Certainty…for it is but of little consequence to a complete Taylor, what the Fashions are; his business is to fit the body, that no constriction or unnatural compression may be felt at any part.[10]

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[8] Walter G. Robillard, Donald A. Wilson, *Evidence and Procedures for Boundary Location, Fourth Edition* (New York: John Wiley & Sons, 2004), 114.

[9] Noah Waugh, *The Cut of Men's Clothes: 1600-1900* (New York: Routledge, 1964), 130.

[10] *The Taylor's Complete Guide, or A Comprehensive Analysis of Beauty and Elegance in Dress* (London: Allen and West, 1799?), 2-3, 7.

The *Taylor's Guide* spends the remainder of its chapters specifying how tailors should use a tape measure and which measures are necessary for certain garments, reinforcing the uniformity with which tailoring was to be carried out.[11] This charge to take up tailoring as a rational discipline of precise measures, with the tape measure as the fulcrum, was a direct challenge to existing tailoring techniques. Medieval tailors had already shifted from "long rectangular pieces of fabric, which were either wrapped around the body or…assembled with a minimum number of cuts" to cutting fabric into shapes or patterns that better approximated the human body.[12] As the demand for form-fitting clothing rose in the early 1800s, tailors began to rely on the tape measure rather than approximations to exactly capture a client's size.[13] Furthermore, the standardization of the tape measure and of general proportions (e.g. arm span is usually nearly equal to height) allowed for factories to produce clothing at scale for specific measurements and with agreeable proportions.[14] Once an individual knew their measurements, they could theoretically purchase ready-made or assemble well-fitting clothing without the assistance of a tailor, increasing the ability of a burgeoning bourgeoise to follow fashion

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[11] *The Taylor's Complete Guide.*

[12] Rickard Lindqvist, *Kinetic Garment Construction: Remarks on the Foundations of Pattern Cutting* (Borås, Sweden: University of Borås, 2015), 69.

[13] Waugh, 130-132. See also *Instruction Book for the Standard Tailor System, A Self-Instructor with Object Lessons in the Art of Cutting all Styles of Garments for Ladies, Gentlemen, Children and Infants* (Chicago: H.P. Evan Co., 1896).

[14] Christine Seifert, *The Factory Girls: A Kaleidoscopic Account of the Triangle Shirtwaist Factory Fire* (Minneapolis: Zest Books, 2017), 39-41. See also Bonnie English, *A Cultural History of Fashion in the 20th and 21st Centuries: From Catwalk to Sidewalk, Second Edition* (New York: Bloomsbury, 2013), 66-70.

and cement themselves as respectable, well-heeled Americans.[15] This would become especially important as the country expanded rapidly westward; mail order catalogs would become a crucial way that isolated Americans in the West received information about fashion and, in turn, felt themselves to be Americans participating in a commercial and material culture.[16]

Racial scientists proved to be other influential proponents of the tape measure in the 1800s. Racial scientists, as the name suggests, were intent on creating and maintaining categories of race that upheld white supremacist beliefs and institutions.[17] The tape measure became a key means of documenting bodily measurements that supposedly indicated deep biological rifts between races, used to justify the dehumanization of BIPOC.[18] Many racial scientists focused on the measurement of skulls as a means to discredit the intelligence and morality of those who fell lower on their arbitrary racial registers.[19] In his 1871 follow-up to *On the Origin of Species* (1859), Charles Darwin wrote, "The belief that there exists in man some close relation between the size of the brain and the development of the intellectual faculties is supported by the

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[15] Linda Young, *Middle-Class Culture in the Nineteenth Century: America, Australia and Britain* (New York: Palgrave MacMillan, 2003), 162-170. See also Mary D. Troxell, Elaine Stone, *Fashion Merchandising* (University of Wisconsin, Madison, 1981), 149.

[16] Sara E. Quay, *Westward Expansion* (Westport, Connecticut: Greenwood Press, 2002), 99-100. See also *1897 Sears Roebuck & Co Catalogue* (New York: Skyhorse Publishing, 2007).

[17] Ann Fabian, *The Skull Collectors: Race, Science, and America's Unburied Dead* (University of Chicago, 2010). See also Robert Wald Sussman, *The Myth of Race* (Cambridge, Massachusetts: Harvard University Press, 2014).

[18] BIPOC refers to Black, Indigenous, and People of Color. Ibid.

[19] See Fabian. See also Samuel George Morton, *Crania America; Or A Comparative View of the Skulls of Various Aboriginal Nations of North and South America* (Philadelphia: J. Dobson, 1839).

comparison of the skulls of savage and civilized races."[20] The dedication of racial scientists to the preservation of the savage/civilized binary gave new logics and urgency to imperial violence, immigration restriction, and white supremacist domination of BIPOC.[21] As a material object, the tape measure carries all of this history and prejudice within in it, a tool haunted and animated by the weight of its past. As I will show, the acceleration of measurement, standardization, and classification of the human body was—and remains—far from benign.

Long before the era of the tape measure or the Vitruvian man, ancient civilizations like those in Mesopotamia, China, and Egypt developed systems of measurement that enabled the construction of irrigation canals, cities, and enduring wonders of the world.[22] The ancient Egyptians maintained "short cubit" measurement rods of approximately six palms that were used for monument building.[23] Many of the surviving short cubit rods appear to have ceremonial and religious imagery, and the monuments those rods were used to build (e.g. the pyramids) attest even today to the religious signification and political might of the pharaohs; measurement, as it is seen here, is mastery.[24] The ability to rearrange nature and materials to create buildings that

[20] Charles Darwin, *The Descent of Man, and Selection in Relation to Sex vol. 1* (New York: D. Appleton and Company, 1871), 140.
[21] BIPOC refers to Black, indigenous, and people of color. See Fabian. See Sussman.
[22] Williams, 9. See also W. M. Flinders Petrie, *Inductive Metrology; or, The Recovery of Ancient Measures from the Monuments* (London: Hargrove Saunders, 1877).
[23] Scott, 70.
[24] Ibid, 71-75. See also Frank Monnier et. al., "The use of the 'ceremonial' cubit rod as a measuring tool: an explanation," *The Journal of Ancient Egyptian Architecture* 1 (2016), 1-9.

are both aesthetically and structurally sound underscores the power that measurement allowed these ancient civilizations to wield.

That said, measurement did not entail widespread standardization. Even though short cubit rods and other standards of measurement were held up as official measures and contained only minor variations, "every Egyptian community [also] had its local standards…the villager of the time of the pharaohs used his own hand and arm rather than any official measuring rod."[25] Measurement was and is a national project impressed in a top-down manner; the degree to which the standardization of measurement is widespread is at once an indication of how much a centralized power prioritizes standardization and, perhaps more importantly, to what degree the mass production (and therefore trade) of increasingly standardized goods is taking place.[26] Standardization became increasingly important through the Industrial Revolution (around 1750-1850), the emergence of factories (the first appearing around 1790 in the United States), and the innovation of the assembly line (a 1913 Ford invention).[27] The mass production of uniform goods tended to create efficiency, both in economic and cultural terms; a

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[25] Scott, 70.

[26] To clarify this last point, I mean the trade of goods between communities, and then states, and then countries, with each scale upward requiring still more stringent standardization that may conflict with locally held standards of measurement. Not only do all trade partners have to agree on the amount of goods (measurements of size and weight), but on how those goods can be repaired, modified, and/or used with existing goods, all of which require reliable and standardized part sizes. For example, in 1875, the United States participated in the Metric Convention, which sought to solidify the standardization of the metric system between major trading partners in the Americas (including Brazil, Peru, and other South American countries) and Europe. See United States Metric Association, "Metric Convention of 1875," *usma.org*, November 11, 2015.

[27] Charles More, *Understanding the Industrial Revolution* (New York: Routledge, 2000), 2. See also Gavin Weightman, *The Industrial Revolutionaries: The Making of the Modern World, 1776-1914* (New York: Grove Press, 2007), 38-40. See also PBS, "Ford installs first moving assembly line: 1913," *pbs.org.*

standardized good that could be mass produced (e.g. the Model T) tended to promote a standardized national rather than regional culture or identity (e.g. a national passion for cars and road trips).[28]

The quest for standardization in the United States took one of its first meaningful steps in 1789, when Samuel Slater immigrated to the fledgling United States from Britain.[29] Slater brought with him a working knowledge of spinning and weaving machines that he would recreate and improve, developing some of the first American factories as he did so.[30] Early American factories often faced challenges procuring machinery and labor due to their geographic distance from manufacturing centers and expertise in other countries, poor internal infrastructure for land transport, and competition with family farms and apprenticeships for labor.[31] In the antebellum United States, such concerns had largely subsided and a garment industry had blossomed, with "430 clothing houses doing business in New York City."[32] Massachusetts-born Elias Howe improved on existing sewing machines with his 1845 model, and—after some resistance from manufacturers—successfully demonstrated the necessity and profitability

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[28] David E. Nye, *America's Assembly Line* (Cambridge, Massachusetts: MIT Press, 2013). See also Peter J. Blodgett, "How Americans Fell in Love With Taking Road Trips," *Time*, August 15, 2015. See also Lizabeth Cohen, *A Consumer's Republic: The Politics of Mass Consumption in Postwar America* (New York: Vintage Books, 2003), 10-13.

[29] William Babcock Weeden, *Economic and Social History of New England, 1620-1789* vol. II (Boston: Houghton, Mifflin and Company, 1891), 849-851. See also Weightman, 38-40.

[30] Ibid.

[31] This source describes the lack of knowledge and machinery as well as difficulties securing labor: ed. Jolyon P. Girard and Randall M. Miller, *The Greenwood Encyclopedia of Daily Life in America* (Westport, Connecticut: Greenwood Press, 2009), 258-259. This book talks more explicitly about the development of infrastructure in the 1800s that supported economic growth: Donald William Meining, *The Shaping of America: Continental America, 1800-1867* (New Haven: Yale University Press, 1986), 252-314.

[32] Michael Zakim, "A Ready-Made Business: The Birth of the Clothing Industry in America," *The Business History Review* 73, no. 1 (Spring 1999), 61.

of his machine.[33] Howe's sewing machine made mass production of clothing eminently feasible, and by the 1850s, sewing machines were in broad use in New York clothing houses, "dramatically increasing productivity."[34] Clothing houses produced ready-made clothing that carried an implicit democratic promise: "Articles of clothing are now at the command of the lowest members of society, which, but a century since, were scarcely within the reach of crowned heads."[35] This promise could only be kept with the assistance of the tape measure, a means for men especially to select clothing that would fit them; the mass production of Civil War uniforms solidified standardized male clothing sizes.[36] American women struggled to secure the same standardization of clothing sizes.

[33] George Iles, *Leading American Inventors* (New York: Henry Holt and Company, 1912), 338-368.
[34] Zakim, 64. See also Iles, 338-368.
[35] Zakim, 63.
[36] Carolyn M. Goldstein, *Creating Consumers: Home Economists in Twentieth-Century America* (Chapel Hill: The University of North Carolina Press, 2012), 119.

Chapter 1: American Women and the Tape Measure

The earliest contact that many American women likely had with a tape measure was as a means to determine their clothing sizes and/or to create clothes for themselves and their families. Before 1930, there was no universal standardization in women's clothing sizes.[37] When the U.S. Bureau of Standards and Measurements did create standard measures, they based girl's clothing sizes on age—a sixteen-year-old girl wore a size sixteen—and women's clothing sizes on bust size—a woman with a bust of forty inches wore a size forty.[38] This system is obviously less than ideal, as it first assumes age as a reliable standard for body size and then bust size when radically different body types can have the same bust size. That said, the variation between women's bodies had made it difficult to create a clothing size standard like men had enjoyed since the Civil War.[39] Part of the challenge of developing standardized women's sizes was that women tend to have a greater variation in bust, waist, and hips (among other body type variations) than men do in torso; additionally, many women historically spent a good deal of their lives pregnant, meaning that their measurements were often in a state of flux that made it difficult to find clothes that would reliably fit.[40] Considering that the United States is a nation of immigrants, the challenge of standardizing women's clothing sizes seems still

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[37] Joy Spanabel Emery, *A History of the Paper Pattern Industry: The Home Dressmaking Fashion Revolution* (London: Bloomsbury, 2014), 179.
[38] Ibid.
[39] ed. Jose Blanco F. and Mary D. Doering, *Clothing and Fashion: American Fashion From Head to Toe, Volume I* (Santa Barbara, CA: ABC-CLIO, 2016), 175. See also Goldstein, 119.
[40] For more on variation in women's body types, see K.L. Labat, "Sizing Standardization," *Sizing in clothing: Developing effective sizing systems for ready-to-war clothing* (Boston: CRC Press, 2007), 88-107. See also Sarah Lindig and Charlotte Chilton, "The Evolution of Maternity Style," *elle.com*, January 13, 2020.

greater, given that different body types are often more or less prevalent in certain countries; in the United States, all body types are represented to one degree or another.[41] With the rise of mail order catalogues and other pattern services, the tape measure became a vital tool for women to participate in a national culture of fashion as they put together clothes that would actually fit them and their families.[42]

The Department of Agriculture finally created the first modern standardized women's clothing sizes after a 1939 study of the measurements of 14,698 American women.[43] However, the study had required that participants be white, among other factors that compromised the reliability of the data.[44] Additionally, the findings of the study were not applied until manufacturers, seeking "to increase consumer satisfaction and decrease the number of returns" eagerly adopted the standards in 1958, when the already compromised standards were completely out of date.[45] Various attempts have been made to standardize women's measurements, but even today many women rely on tape measures and online sizing guides to judge if clothes will or should fit them.[46]

Many American women also encountered the tape measure in a medical and/or fitness setting. In 1864, physician and physical education advocate Dio Lewis opened a

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[41] J. Chun, "international apparel sizing systems and standardizations of apparel sizes," *Anthropometry, Apparel Sizing and Design* (Cambridge: Woodhead Publishing, 2014), 274-304.
[42] Emery.
[43] Ruth O'Brien and William C. Shelton, *Women's Measurements for Garment and Pattern Construction* (Washington D.C.: Government Printing Office, 1941).
[44] Katrina Robinson, "The Origins of Clothing Sizes," *seamwork.com*
[45] "A History of Standard Clothing Sizes: How sizes developed and why the same size does not always fit," *fashionlawwiki.pbworks.com.* See also Robinson.
[46] "A History of Standard Clothing Sizes." See also Paige Waehner, "Taking Body Measurements During Weight Loss," *verywellfit.com*, December 6, 2019.

combined "Family School for Young Ladies and…movement cure sanitarium" in Lexington, Massachusetts.[47] Lewis initially developed a system of exercises—a "movement cure"—when his wife, Helen Cecelia Clarke-Lewis, developed consumption and "rapidly dropped in weight from 116 to 80 pounds."[48] The 1860 U.S. Census found that the chief cause of mortality of males and females aged 15 to 20 were "*fever* and *consumption*" with "17 percent of the males and 29 percent of the females" who died passing away from consumption.[49] Similar numbers persisted for other age groups, consumption responsible for 38% of the deaths of women aged 20-25, 40% of the deaths of women aged 25-30, and so on.[50] Another name for tuberculosis, consumption touched the lives of almost every American in this period (mid-1800s).[51] Trailblazers like Dio Lewis suggested "vigorous exercise" for women as both a cure for consumption and a building block of a healthy lifestyle, almost a preventative measure.[52] Lewis measured the success of his wife's treatment by monitoring "increase[s] in the size of her waistline"; at the school he opened in 1864, measurement became a way to communicate the improved health of students—in "the upper part of the chest, the average enlargement was two and three-quarter inches…[the pupils] ha[ve] grown muscular and healthy."[53]

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[47] Jan Todd, *Physical Culture and the Body Beautiful: Purposive Exercise in the Lives of American Women, 1800-1875* (Macon, Georgia: Mercer University Press, 1998), 263.
[48] Ibid, 214.
[49] U.S. Census Bureau, *Statistics of The United States in 1860, The Eighth Census* (Washington D.C.: Government Printing Office, 1866), 263.
[50] U.S. Census Bureau, *The Eighth Census*, 263.
[51] I. Barberis et al., "The history of tuberculosis: from the first historical records to the isolation of Koch's bacillus," *Journal of Preventative Medicine and Hygiene* 58, iss. 1 (March 2017), E9-E12. See also Lois W. Banner, *American Beauty* (New York: Knopf, 1983), 52.
[52] Todd, *Physical Culture and the Body Beautiful*, 215, 263-266.
[53] Ibid, 216, 265.

That said, in his book *The New Gymnastics* (1862), Lewis admonished "the 'big-muscle' men [who] seem to appreciate nothing but size. They think we can determine constitution and health by the tape line; that all exercises whose results are not determinable by measurement are worthless."[54] Lewis clearly disagreed with an overreliance on measurement, though he nonetheless employed it as a way to affirm the greater muscularity and health women appreciated under his system of exercises.

Aside from providing measurements for clothing and affirmations of health, the tape measure also allowed a growing tide of American women to consider how their measurements fit within the beauty standards of the day. The period from 1850-1950 is an interesting one because it starts with an intense focus on hourglass figures and small waistlines, transitioned to a more athletic, slim ideal in the 1920s, and then emphasized bust and curves by the end of the 1930s.[55] In the 1860s, Harriet Beecher Stowe noted that women unhappy with a fuller figure "make secret enquiries into reducing diet, and…cling desperately to the strongest corset."[56] From about the 1820s onward, "the stylish circumference [for a women's waist] was eighteen inches."[57] One commentator described how the waist should resemble "an inverted cone…if our hands were placed under the lateral parts of the tapering waist…the slightest pressure would suffice to throw

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[54] Dio Lewis, *The New Gymnastics for Men, Women and Children, Twenty-Fourth Edition* (New York: The Canfield Publishing Company, 1888), 83.
[55] Banner, 47-65, 275-291. See also *Life*, "This is the Ideal Figure that Modern Women Want," August 15, 1938, 38. See also Chas. Kroeber, "The Ideal Female Figure," *Women's Physical Development* 1, no. 4 (January 1901), 157-161.
[56] Banner, 47.
[57] Ibid, 48.

her into the air."[58] Such standards were often unfeasible and led to unhealthy behaviors in the pursuit of beauty.

The prominence of consumption assisted in the perpetuation of this ideal, both in that women with consumption were often thinner and better able to keep a slimmer waist (until they improved or passed away) and in that the pursuit of this ideal encouraged women to engage in behaviors that increased their risk of contracting and suffering from consumption.[59] Some contemporary commentators even blamed women for their vulnerability to consumption, suggesting that "women chose to tightlace [corsets], to avoid exercise, to eat and dress improperly," thereby making them responsible for their own fates.[60] By the late 1880s, a culture of measurement as well as a celebrity culture were firmly in place, with stars like Lillian Russell at times criticized for having a bigger waist and then working to reduce so they could maintain a measurement-proven hourglass figure.[61] Numbers began to represent one's beauty, femininity, and desirability.

Celebrity fan magazines like *Photoplay* (1914-1963) and *Hollywood* (1934-1943) often trafficked in celebrity measurements, and especially the measurements of actresses. In one 1934 issue of *Hollywood*, Jean Harlow responds to a reader asking after her measurements with a full inventory: "five feet three and one-half inches tall; weight, one

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[58] Alexander Walker, *Beauty: Illustrated Chiefly by an Analysis and Classification of Beauty in Women* (Hartford: S. Andrus & Son, 1848), 191.
[59] Banner, 52.
[60] Banner, 52.
[61] Armond Fields, *Lillian Russell: A Biography of 'America's Beauty'* (Jefferson, North Carolina: McFarland & Company, Inc., 1999), 51-52.

hundred and ten; bust, thirty-five inches; waist, twenty-three and one-half inches; hips, thirty-five and one-half."[62] More often, the three measurements that would give a precise idea of body type (bust, waist, hips) were withheld in favor of publishing the height and weight of actresses.[63] That said, advertisements in these fan magazines are rife with discussion of bust, waist, and hip measurement and ways to reduce or expand one's measurements.[64] It seems as if the reason for the lack of in-depth celebrity measurements was less a matter of lack of interest and more a matter of actresses or their studios needing to sign off on the release of their official measurements. Some feature newspaper articles of the 1940s and 1950s include the measurements of superstars like Elizabeth Taylor and Marilyn Monroe as a means to emphasize their sex appeal:

> [Monroe] has become the personification of all that is desirable in a woman. She is taller than average…her bust measures 38 inches around and her waist measures 28 inches and her hips measure 37 inches. She is a lot of girl…I never heard a man make this complaint.[65]

There is, of course, a darker side to such fixation on numeric desirability and beauty standards that increasingly pushed many women to engage in unhealthy behaviors to meet such standards.[66] A subjective beauty standard backed up by "objective," gatekeeping numbers was and is a difficult one that has taken a great toll on many women

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[62] *Hollywood,* "Cross-Examining the Stars," January 1934, 42.
[63] One example, Edith Head commenting how she dresses certain actresses based on their height: Edith Head, "Right, Dress!" *Photoplay,* October 1944, 73.
[64] One example (among thousands): *Photoplay,* "Wives with Hips," February 1925, 131.
[65] Maurice Zolotow, "The Mystery of Marilyn Monroe," *The Washington Post and Times Herald,* September 25, 1955. See also Cameron Shipp, "Elizabeth Taylor: The Most Beautiful Girl in Hollywood," *Cosmopolitan* 130, iss. 3 (March 1951), 48-51, 105-108.
[66] Joan Jacobs Brumberg, *Fasting Girls: The History of Anorexia Nervosa* (New York: Vintage Books, 1988). See also Hilde Bruch, *Eating Disorders: Obesity, Anorexia Nervosa, and the Person Within* (Philadelphia: Routledge & Kegan Paul, 1974).

and girls. "Between 1935 to 1989," girls "15-24 years old showed a highly significant…increasing trend" of anorexia nervosa; "for each decade since the 1950s," rates of anorexia nervosa have increased in girls 10-14 years old.[67] While "anorexia afflicts about .5% of women and .1% of men…bulimia [affects] around 1-3% of women (also .1% of men)."[68] The tape measure has served a fundamental role in the creation of a culture of measurement and accelerated restriction and continues to enforce beauty standards that do not reflect the majority of American women.

[67] ed. Timothy D. Brewerton, *Clinical Handbook of Eating Disorders: An Integrated Approach* (New York: Marcel Dekker, 2005), 80.
[68] Emily Deans, "A History of Eating Disorders," *psychologytoday.com,* December 11, 2011.

Chapter 2: Racial Scientists and the Tape Measure

In a similar manner to how the tape measure helped enforce changing standards of beauty for women throughout the 1900s, the tape measure also helped to legitimize scientific hierarchies of race in the mid-1800s through early 1900s. Even in the 1700s, the founding fathers conceptualized who and what Americans should look like and be, and the founding documents indicate who was *not* an American: principally Black people (free or held in bondage) and indigenous peoples, among other marginalized groups.[69] In most cases, even white men without land and white women—with or without land—were not quite fully American, not trusted to vote in the earliest voting laws.[70] Even if they had land, white landed men could only vote for a representative in the House, with Senators selected by state representatives and the President selected through the mediation of the electoral college.[71] As a key facet of citizenship and political power, securing voting rights was a priority for both the Women's Rights Movement of the 1920s and Civil Rights Movement of the 1960s.[72] By voting, women

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[69] Ibram X. Kendi, *Stamped from the Beginning: The Definitive History of Racist Ideas in America* (New York: Nation Books, 2016). See also Jill Lepore, *The Name of War: King Philip's War and the Origins of American Identity* (New York: Vintage Books, 1999).

[70] Scholars have recently placed the number of eligible male voters in the late colonial period higher than previously thought, some estimating that 50-80% of white men owned land and were therefore eligible to vote. Given that land was often cheap and plentiful in this era, it seems possible there might have been such widespread eligibility among white men; additionally, Pennsylvania broadened its vote to "all taxpaying adult males" as early as 1776. See Donald Ratcliffe, "The Right to Vote and the Rise of Democracy, 1787-1828*," Journal of the Early Republic 33* (Summer 2013), 220-223.

[71] Thomas H. Neale, *Filling U.S. Senate Vacancies: Perspectives and Contemporary Developments* (Washington D.C.: Congressional Research Service, 2011), 1-2. See also Thomas H. Neale, *The Electoral College: How It Works in Contemporary Presidential Elections* (Washington D.C.: Congressional Research Service 1999). See also

[72] Ellen Carol DuBois, *Suffrage: Women's Long Battle for the Vote* (New York: Simon & Schuster, 2020). See also Gary May, *Bending Toward Justice: The Voting Rights Act and the Transformation of American Democracy* (New York: Basic Books, 2013).

and Black Americans (and doubly Black women) could assert their identities and protections as Americans. Throughout the 1800s and early 1900s, human measurement resisted calls to broaden American identity and instead served to maintain the boundaries of who was *not* an American, a foregone conclusion increasingly reinforced by racial scientists and eugenicists.[73]

The particular horrors of slavery also suggest that the racist history of human measurement and quantification began far earlier than with the tape measure.[74] The labor that enslaved persons were made to perform included surveillance and standardization that forced enslaved persons working in the fields to recreate exact picking counts day after day or risk violent retribution for their failure to do so, with this but one example of many such cruelties.[75] The crude human measurement that took place on auction blocs and in daily life reduced kidnapped and enslaved Africans and their descendants to bodies that would build American wealth and empire.[76] Until 1865, American perpetrators of slavery tied numeric, monetary values to human life. It is no coincidence that phrenology and a bevy of pseudosciences rose to the fore to fill this void in measurement, in the quantification of human worth, as slavery ebbed away, leaving in its

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[73] ed. Paul A. Lombardo, *A Century of Eugenics in America: From the Indiana Experiment to the Human Genome Era* (Bloomington: Indiana University Press, 2011). See also Jessica Blatt, *Race and the Making of American Political Science* (Philadelphia: University of Pennsylvania Press, 2018).

[74] Walter Johnson, *River of Dark Dreams: Slavery and Empire in the Cotton Kingdom* (Cambridge, Massachusetts: Harvard University Press, 2013). See also Edward E. Baptist, *The Half Has Never Been Told: Slavery and the Making of American Capitalism* (New York: Basic Books, 2014).

[75] Johnson, 245-250.

[76] See Johnson. For more on the auction block, see Katherine McKittrick, *Demonic Grounds: Black Women and the Cartographies of Struggle* (Minneapolis: University of Minnesota Press, 2006), 72-88.

wake centuries of racist vitriol in search of "scientific," "objective" justification for its ugliness.

The roots of racist pseudoscience disciplines like physiognomy, craniology, phrenology, and eugenics ran deep, physiognomy traced back to ancient Greece and Rome and the lauded foundations of "western civilization" and "reason" as scientists of the era would have understood them.[77] Physiognomy developed from the Greek medical theory of the "four humors (blood, phlegm, yellow bile, and black bile)…good health [was] defined as the balance and mixture of the humours."[78] While misbalanced humours were understood to cause disease and other medical conditions, humours also became a means to describe personalities, essentially predilections towards certain humours. [79] For example, individuals who were thought to carry a lot of yellow bile (cholerics) "were quick-tempered, sometimes resentful or envious," which likely helped solidify a visual language for different personality traits (e.g. a choleric individual often illustrated as yellow-faced or a healthy sanguine individual often with a ruddy complexion).[80]

The comforting premise of physiognomy, and really of all of these pseudosciences, was that one could understand who a person was just by looking at or measuring them. Physiognomy (literally the knowledge "gno" of one's physical nature

[77] Thomas C. Patterson, *Inventing Western Civilization* (New York: Monthly Review Press, 1997).
[78] Jacques Jouanna, *Greek Medicine from Hippocrates to Galen: Selected Papers* (Leiden, The Netherlands: Koninklijke Brill, 2012), 335.
[79] Noga Arikha, *Passions and Tempers: A History of the Humours* (New York: HarperCollins, 2007), 10.
[80] Ibid. See also U.S. National Library of Medicine, "The World of Shakespeare's Humors," *nlm.nih.gov*.

"physio") purported to allow one to look at a face and, through the curvature and shapes present within the face, know if a person is moral, noble, and (implicitly) worthy of life.[81]

For example, an 1890 physiognomy guide used a sketch of United States Senator Thomas Hart Benton as proof that "large nostrils are indicative of good heart and lung power…inducing buoyancy of spirits, quickness and clearness of apprehension, ambition, hope, and progressive mentality."[82] Conversely, "the [American] Indian" is singled out for "credenciveness," defined as a "belief in hearsay evidence, history, [and] tradition…in undeveloped races is manifested by their childish and unreasonable beliefs in the sanctity and power of certain objects, animals, and images" and indicated by "the height of the eyebrow above the eye…a *high arching* of the brow…in the Mongolian race, and in other superstitious races, the eyebrow at its inner terminus stands so far away from the eye as to leave a space between it and the eye."[83] Throughout his Senate career, physiognomic subject Benton led the charge for westward expansion, coining "Manifest Destiny" to describe the supposedly God-given right Americans had to "civilize" and incorporate the West.[84] Proponents of westward expansion relied on racist understandings of Native Americans like those suggested in physiognomic handbooks in order to justify the theft of supposedly "empty" or "underutilized" Native American lands

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[81] John Caspar Lavater, *Essays on Physiognomy; Designed to Promote the Knowledge and Love of Mankind, Third Edition* (London: B. Blake, 1811), 11-12.
[82] Mary Olmsted Stanton, *A System of Practical and Scientific Physiognomy; or, How to Read Faces* vol. 1 (Philadelphia: F.A. Davis, 1890), 73.
[83] Ibid, 578-579.
[84] Reginald Horsman, *Race and Manifest Destiny: The Origins of American Racial Anglo-Saxonism* (Cambridge, Mass.: Harvard University Press, 1981), 116-138. For more on Benton, see Ken Mueller, *Senator Benton and the People: Master Race Democracy on the Early American Frontiers* (DeKalb, Illinois: NIU Press, 2014).

and the genocide of Native Americans perpetrated by the United States government on behalf of white settlers.[85]

In a similar manner (but to a far larger audience), phrenology promised that studying the bumps and size of a skull could reveal the size of different, discrete "organs" within a person's brain. This would therefore supposedly reveal one's inner nature, particularly one's intellectual potential and inherent criminality. One of the field's pioneers reached the following conclusions in an 1825 phrenological publication:

> the foreheads of negroes are narrow, and their musical and mathematical talents are, in general, very limited. The Chinese are fond of colours, and have the eyebrows much vaulted…the heads of the Kalmucks [Kalmyks, a Mongol subgroup in Russia] are depressed from above, but very large laterally, about the organ which gives the inclination to acquire, and this nation's propensity to steal, etc., is admitted.[86]

While phrenology did correctly deduce that certain, discrete parts of the brain carried out particular functions, phrenological pseudoscientists had little idea what those functions were and where they were located within the brain, additionally assuming incorrectly that the size of one's skull or parts of one's skull revealed something precise about the brain beneath it.[87]

For much of the 19th century (and particularly the mid-1800s), phrenology pervaded popular wisdom, a pseudoscience that many Americans found applicable to

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[85] One such 1849 guide identified stereotypical "American Indian" features that supposedly indicated a "propensity for war." See James W. Redfield, *Outlines of a New System of Physiognomy* (New York: J.S. Redfield, 1849), 36-37.

[86] Johann Gaspar Spurzheim, *Phrenology, or the Doctrine of the Mind and of the Relations Between Its Manifestations and the Body* (London: Charles Knight, Pall-Mall East, 1825), 96.

[87] "F.J. Gall and phrenology's contribution to neurology," *healio.com*, February 10, 2009.

themselves and their lives.[88] Phrenology luminaries undertook nationwide lecture tours and published authoritative books and journal articles about the applications of phrenology and its relevance to social reform.[89] Even America's foremost poet Walt Whitman subscribed to phrenology, so impressed with the phenological chart that prominent phenologist Lorenzo Fowler made for him that he sold early editions of *Leaves of Grass* (first published in 1855) through the Fowlers' phenological storefront.[90] By Whitman's own account, phrenology would fundamentally shape the way he saw himself and the sort of poetry he produced.[91]

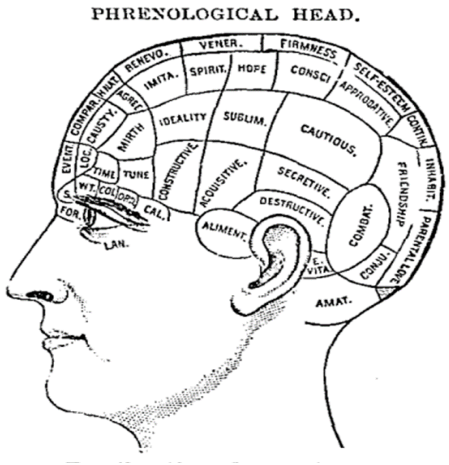

Figure 1: This commonly used phrenological sketch claimed to show the location of character traits within the brain.[92]

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[88] S. H. Greenblatt, "Phrenology in the science and culture of the 19th century," *Neurosurgery* 37, iss. 4 (October 1885), 790-804. See also Jean V. Matthews, *Toward a New Society: American Thought and Culture, 1800-1830* (Woodbridge, Connecticut: Twayne Publishers, 1991), 74-75.

[89] Todd, *Physical Culture and the Body Beautiful*, 173-178. See also

[90] Arthur Wrobel, "Phrenology," *Walt Whitman: An Encyclopedia* (New York: Garland Publishing, 1998). See also Colin Dickey, *Cranioklepty: Grave Robbing and the Search for Genius* (Lakewood, Colorado: Unbridled Books, 2009), 111-117.

[91] Edward Hungerford, "Walt Whitman and His Chart of Bumps," *American Literature 2*, no. 4 (January 1931), 370-377.

[92] E. G. Bradford, "Practical Phrenology," The Phrenological Journal and Science of Health 92, iss. 6 (June 1891), 263. Bradford argues that all humans (from "the ignorant African…[to] the philosopher of our

Just as with physiognomy, phrenology reached conclusions that supported long-held and largely unquestioned European and American assumptions of the superiority of the white (particularly Anglo-Saxon) race.[93] This white supremacist narrative only accelerated after the 1859 publication of Charles Darwin's *On the Origin of Species*, which, extrapolated out, suggested that humans were descended from apes and that evolution produced ever "fitter" specimens.[94] Many racial scientists interpreted this to mean that some humans were less evolved than others and in some cases even evolutionarily closer to animals than other human beings, a wholescale dehumanization of entire groups based on where they lived and what they looked like.[95]

Italian physician and criminology pioneer Cesare Lombroso drew on Darwin and likely used the tape measure in his 1876 publication, *Criminal Man*, in which he reaches broad conclusions based on the measurements and examinations of the skulls of sixty-six criminals. Lombroso infamously fixates on an "indentation at the base of the skull" of a man called Giuseppe Villella, detailing the measurements of the indentation and his assumption that Villella must have had "a fairly small cerebellum" with similarities

> not…[to] the primate, but the lower level of the rodent or lemur, or the brain of a human fetus of three or four months…I cannot avoid pointing out how closely

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day") have religion, but only some have the correct theology, the correct belief in a just and benevolent God that informs the "harmoniously developed man," as is apparently borne out in his phrenological make-up (263).

[93] Allan Chase, *The Legacy of Malthus: The Social Costs of the New Scientific Racism, Third Edition* (Chicago: University of Illinois Press, 1980) 87-110. For more on the continued legacy of racial science, see Angela Saini, *Superior: The Return of Race Science* (Boston: Beacon Press, 2019)

[94] Pat Shipman, *The Evolution of Racism: Human Differences and the Use and Abuse of Science* (Cambridge, Mass.: Harvard University Press, 1994).

[95] Ibid.

> [the skulls of criminals and the insane] correspond to characteristics observed in normal skulls of the colored and inferior races.[96]

Just as pseudosciences and measurement tools offered new legitimacy to entrenched white supremacist institutions and attitudes, Darwin's theory of evolution became yet another tool by which to claim objective "proof" of the inferiority of others, especially BIPOC and those with physical and/or mental disabilities.[97] Darwin's cousin, Francis Galton, pioneered a eugenic movement that sought to codify a hierarchy of races genetically, with white Anglo-Saxons placed prominently at the top.[98] In his 1869 *Hereditary Genius,* Galton compares "the negro race with the Anglo-Saxon," finding that "the number among the negroes of those whom we should call half-witted men, is very large…the mistakes the negroes made in their own matters, were so childish, stupid, and simpleton-like, as frequently to make me ashamed of my own species."[99] Galton then poses an existential threat, identifying the "ablest race…[as] unquestionably the ancient Greek," who cultivated "emigration and immigration" that caused "the purity of [their] race [to] necessarily fail," leading to the fall of their civilization and a tremendous setback in human ability.[100] Eugenicists suggested other races as not only lesser and

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[96] Cesare Lombardo, *Criminal Man*, translated by Mary Gibson and Nichole Hahn Rafter (Durham: Duke University Press, 2006), 48.
[97] BIPOC refers to Black, Indigenous, and People of Color. For more on scientific racism and Darwinism, see Chase, *The Legacy of Malthus.*
[98] Sussman, *The Myth of Race.*
[99] Francis Galton, *Hereditary Genius: An Inquiry into Its Laws and Consequences* (New York: D. Appleton and Company, 1891), 338-339.
[100] Ibid, 340, 343.

therefore supposedly disposable, but as actively harmful to the "most evolved" whites actively carrying forward the torch of human progress.[101]

The logic that resulted was that of genocide and sterilization; the logic of the Holocaust, of lynching, and of the vast exclusion of many communities of color and of many with disabilities from opportunities, government resources, and reproductive rights.[102] Racial scientists often saw fit to create an overlapping nexus of criminality, race, poverty, and mental disability, almost using these categorizations interchangeably; stereotypical criminals borne out of scientific data and measurements were often considered non-white, unintelligent, and poor.[103] By that same token, those considered unintelligent were also thought to be non-white, poor, and to carry genes that predisposed them to criminality. While such identities had historically been associated in order to support white supremacist violence and exploitation of BIPOC, the creation of scientific, formal racial hierarchies using instruments like the tape measure allowed for racism to persist and grow even more entrenched in the modern, "enlightened" world of the late 1800s-mid 1900s.[104] There were many American scientists that contributed to this project of legitimating racism and racist government policy, but few used the tape measure as effectively as Samuel George Morton.

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[101] Chase, 111-137.
[102] Anthony M. Platt, Cecilia Elizabeth O'Leary, *Bloodlines: Recovering Hitler's Nuremberg Laws from Patton's Trophy to Public Memorial* (New York: Routledge, 2006). See also ed. Lombardo, *A Century of Eugenics in America*.
[103]Carl C. Brigham, *A Study of American Intelligence* (Princeton: Princeton University Press, 1923), xix, 205. See also Edward Drinker Cope, *The Origin of the Fittest: Essays on Evolution* (New York: D. Appleton and Company, 1887), 155-156. See also Morton, 38, 273.
[104] Sussman, 20-81.

Morton's major contribution to racial science was *Crania Americana* (1839), a thorough comparison "of the Skulls of various Aboriginal Nations of North and South America…[and] an Essay on the Varieties of the Human Species."[105] Morton devoted his career to collecting and measuring skulls, eventually releasing two more volumes to develop a worldwide hierarchy of intellectual capacity and racial difference.[106] Predictably, Morton's findings reinforced existing white supremacist beliefs and took special care to denigrate "lesser" races, including Native Americans:

> Their proximity, for more than two centuries, to European institutions has made scarcely any appreciable change in their mode of thinking, or their manner of life….however much the benevolent mind may regret the inaptitude of the Indians for civilisation, the affirmative of this question seems established beyond a doubt.[107]

Morton follows these assertions with charts of skull measurements, as if they confirm his findings. Considering that Morton published a decade after the Indian Removal Act (1830), on the tail end of The Trail of Tears, and before two centuries of detrimental, even genocidal, U.S. policies directed at Native Americans, it is safe to say that Morton was not the conduit of anti-Native American sentiment in the United States.[108] Nonetheless, Morton was one prominent voice among many dehumanizing indigenous peoples as they suffered at the hands of settlers and implying that the

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[105] Morton.
[106] Gould, 53.
[107] Morton, 81-82.
[108] Helen Hunt Jackson, *A Century of Dishonor: A Sketch of the United States Government's Dealings with Some of the Indian Tribes* (New York: Harper & Brothers, 1881). See also Frederick E. Hoxie, *This Indian Country: American Indian Activists and the Place They Made* (New York: Penguin Books, 2012). See also Mark Walker and Emily Cochrane, "Native American Tribes Sue Treasury Over Stimulus Aid as They Feud Over Funding," *The New York Times*, May 1, 2020.

supposed inability of Native Americans as a race to become "civilized" justfied any act that "civilized" white settlers or government officials deemed appropriate. When Morton died in 1851, one American newspaper proclaimed that "probably no scientific man in America enjoyed a higher reputation among scholars throughout the world, than Dr. Morton."[109]

	Toltecan nations, including skulls from the mounds.		*Barbarous nations*, with skulls from the Valley of Ohio.		*American Race*, embracing the Toltecan and barbarous nations.		Flathead tribes of Columbia river.		Ancient Peruvians.	
	No. of skulls.	MEAN.	No. of skulls.	MEAN.	No. of skulls.	MEAN.	No. of skulls.	MEAN.	No. of skulls.	MEAN.
Longitudinal diameter.	57	6.5	90	7.	147	6.75	8	6.7	3	6.8
Parietal diameter.	57	5.6	90	5.5	147	5.55	8	6.	3	5.
Frontal diameter.	57	4.4	90	4.3	147	4.35	8	4.9	3	4.2
Vertical diameter.	57	5.3	90	5.4	147	5.35	8	4.8	3	4.8
Inter-mastoid arch.	57	14.9	90	14.6	147	14.75	8	14.6	3	13.3
Inter-mastoid line.	57	4.1	90	4.2	147	4.15	8	4.1	3	4.
Occipito-frontal arch.	57	13.6	90	14.2	147	13.9	8	13.1	3	14.3
Horizontal periphery.	57	19.4	90	19.9	147	19.65	8	20.	3	18.8
Length of head and face.	53	7.8	78	8.1	131	7.45	8	8.3	3	8.4
Zygomatic diameter.	49	5.3	64	5.3	113	5.3	8	5.7	3	5.1
Facial angle.	55	75° 35′	83	76° 13′	138	75° 45′	8	69° 30′	3	67° 20′
Internal capacity in cubic inches.	57	76.8	87	82.4	144	79.6	8	79.25	3	73.2
Capacity of the anterior chamber.	46	‡32.5	73	34.5	119	33.5	8	32.25	3	25.7
Capacity of the posterior chamber.	46	‡43.8	73	48.6	119	46.2	8	47.	3	47.4
Capacity of the coronal region.	46	‡14.	71	16.2	117	15.1	8	11.9	3	14.6
Capacity of the sub-coronal region.	46	‡61.8	71	66.5	117	64.5	8	67.35	3	58.6
The total capacity being estimated at 100, gives the following proportionate results as parts of 100. Ant. chamb.		42.6		41.5		42.1		40.63		35.1
Post. chamb.		57.4		58.5		60.		59.37		64.9
Coronal reg.		18.47		19.6		19.		15.		20.
Sub-cor. reg.		81.53		80.4		81.		85.		80.

Figure 2: One of Morton's many charts of skull measurements.[110]

In his 1981 publication, *The Mismeasure of Man*, paleontologist Stephen Jay Gould contested Morton's raw data, thousands of measurements of skulls that Morton published freely in support his conclusions. Gould suggested that Morton had not consciously manipulated his data, but had instead engaged in "fudging and finagling in the clear interest of controlling a priori convictions."[111] In other words, Morton already believed deeply in a racial hierarchy when he set about matching skull measurements to

[109] Gould, 51.
[110] Morton, 259.
[111] Ibid, 54.

that arbitrary racial hierarchy; of course he found a way to make the skulls match his preexisting ideas of race. In 2011, the Penn Museum reexamined the Morton Collection and found that "Morton did not manipulate his data to support his preconceptions," concluding "that almost every detail of [Gould's] analysis is wrong."[112] While it is unclear why any institution would choose to defend the scientific honor of someone like Morton, these findings also totally miss the deeper discrepancy with Morton's measurements: measuring a skull is not a reliable means of finding the intelligence or human potential of an individual and the intelligence and human potential of an individual has no bearing on their worthiness of life.

In much the same way as the battles over racial science continue today, the racist origins of criminology are also evident in modern American policing and incarceration. Lombroso closed *Criminal Man* in the following way: "Those who have read this far should now be persuaded that criminals resemble savages and the colored races."[113] What Lombroso's work and the work of many other criminologists of this era suggested was that criminality was largely the product of genetics and racial inheritance and therefore something which could be recognized just by looking at someone (and confirmed by measuring them) and that ultimately was difficult, if not impossible, to reform.[114] Even today, Black Americans are disproportionately more likely to be injured, killed, or arrested by law enforcement than white Americans and additionally often face

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[112] Nicholas Wade, "Scientists Measure the Accuracy of a Racism Claim," *The New York Times,* June 13, 2011.
[113] Lombroso, *Criminal Man,* 91.
[114] Piers Beirne, *Inventing Criminology: Essays on the Rise of* Homo Criminalis (Albany: State University of New York Press, 1993).

longer sentences for the same crimes.[115] Much of the legislation that leaned on early criminology assumed criminality as a heritable character trait rather than a consequence of environment or lack of opportunity.[116] Most often, federal engagement with criminology came in the form of immigration restriction, attempting to limit the number of those from suspect, "criminal" races from entering the United States.[117]

The Chinese Exclusion Act (1882) was among the first in a wave of major immigration restriction legislation, only preceded by the Page Act in 1875. The Page Act restricted the immigration of Chinese women, the law arising out of a fear that Chinese immigrants would work as prostitutes who would harm the moral character of white Americans.[118] The language of the still more restrictive Chinese Exclusion Act depicted Chinese-Americans and particularly immigrant Chinese men as thieves of a sort, stealing labor, opportunity, and money from the white Americans implicitly believed to deserve such things.[119] The Immigration Acts of 1917 and 1924 rose still further to defend the boundaries of whiteness, explicitly setting out lengthy lists of who was unwelcome: "idiots…paupers…persons who have been convicted of or admit having committed a

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[115] Michelle Alexander, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness* (New York: The New Press, 2010). See also ed. Angela Davis, *Policing the Black Man: Arrest, Prosecution, and Imprisonment* (New York: Pantheon Books, 2017). For statistics, see The Sentencing Project, "Report to the United Nations on Racial Disparities in the U.S. Criminal Justice System," April 19, 2018. See also Deidre McPhillips, "Deaths From Police Harm Disproportionately Affect People of Color," U.S. News, June 3, 2020.

[116] Laura I Appleman, "Deviancy, Dependency, and Disability: The Forgotten History of Eugenics and Mass Incarceration," *Duke Law Journal* 68, no. 3 (December 2018): 434-438.

[117] Daniel Okrent, *The Guarded Gate: Bigotry, Eugenics, and the Law that Kept Two Generations of Jews, Italians, and Other European Immigrants Out of America* (New York: Scribner, 2020). See also Andrew Gyory, *Closing the Gate: Race, Politics, and the Chinese Exclusion Act* (Chapel Hill: University of North Carolina Press, 2000).

[118] Gyory, 71.

[119] Gyory, 6-16.

felony or other crime or misdemeanor involving moral turpitude…persons coming into the United States for the purpose of prostitution or any other immoral purpose."[120] The believed overlapping nature of criminality, unintelligence, and poverty as evolutionarily owned by the supposedly "less-evolved" non-white races was used to create a thorough—and, by the previous logic, redundant—immigration dragnet.[121]

The Immigration Act of 1924 went so far as to establish numeric quotas based on nationality (and implicitly, race), decreeing that "the annual quota for any nationality shall be 2 per centum of the number of foreign-born individuals of such nationality…[in] the United States census of 1890."[122] In 1890, the U.S. census recorded a population made up of far more German and other immigrant groups considered white than the Eastern and Southern Europeans who would define post-1890 waves of immigration. Thus, the Immigration Act of 1924 was nothing less than a eugenic recalibration of American whiteness, keeping the doors open for immigrants understood to be white and

[120] "An Act To regulate the immigration of aliens to, and the residence of aliens in, the United States," United States Sixty-Fourth Congress Session II., February 5, 1917, 876.
[121] The assertion of race-criminality-intelligence-class links saw new life after the publication of *The Bell Curve* (1994). See Richard J. Herrnstein and Charles Murray, *The Bell Curve: Intelligence and Class Structure in American Life* (New York: Free Press, 1994). For a rebuttal and contextualization of *The Bell Curve*, see Anita Kalunta-Crumpton "History: Race Relations and Justice," *Race, Crime and Criminal Justice: International Perspectives* (New York: Palgrave Macmillan, 2010), 19. For another rebuttal, see Sussman, 255-269.
[122] "An Act To limit the immigration of aliens into the United States, and for other purposes," United States Sixty-Eighth Congress Session I., May 26, 1924, 159.

severely limiting the immigration of non-whites. Racial scientists used tape measures to establish racial hierarchies that set the course for such a recalibration.

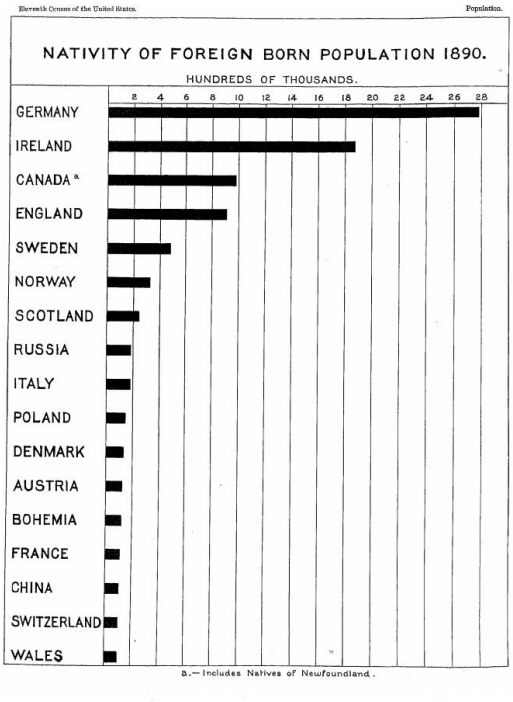

Figure 3: This excerpt from the 1890 census shows the immigration patterns that the Immigration Act of 1924 sought to reinstate.[123]

As much as many of these racist, ableist, and classist exclusions still largely apply in U.S. immigration policy, they often hide behind the purported criminality of "undesirable" immigrants. While today it is largely recognized as unacceptable to reject immigrants based purely on race or ethnicity, such rejections continue to occur by casting immigrants of targeted races or ethnicities as criminals, criminality held up once more as

[123] U.S. Census Bureau, *Eleventh Census of the United States,* "Nativity of Foreign Born Population 1890," 1890.

something recognizable within a person's features and/or genetic inheritance.[124] When President Trump began his run for office in 2015, the first speech of his campaign smeared Mexican immigrants: "They're bringing drugs. They're bringing crime. They're rapists."[125] The shorthand of criminality as it was defined by tape measure-wielding criminologists and phrenologists of the 1800s and early 1900s continues to influence American immigration policy and provide legitimacy to racist defenses of such policy.

Another persisting legacy of racial science is that of sterilization. In their quest to breed "better" humans, eugenicists often posed the necessity of limiting the reproduction of certain groups: those with disabilities (non-normative bodies and/or minds), the poor, and non-whites.[126] In the United States, at least 60,000 designated "undesirables" were sterilized, often without their consent and sometimes without their knowledge.[127] Involuntary sterilization originated in Indiana, a 1907 law seeking "to prevent [the] procreation of confirmed criminals, idiots, imbeciles, and rapists."[128] By 1927, the Chief Justice of the Supreme Court Oliver Wendell Holmes delivered the infamous ruling in

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[124] Daniel Denvir, "The Deep Roots of Trump's Anti-Immigrant Policies," *Jacobin*. See also Emily Kassie, "Detained: How the US built the world's largest immigrant detention system," *The Guardian*, September 24, 2019.
[125] Amber Phillips, "'They're rapists.' President Trump's campaign speech two years later, annotated," *The Washington Post*, June 16, 2017.
[126] Harry Bruinius, *Better for All the World: The Secret History of Forced Sterilization and America's Quest for Racial Purity* (New York: Vintage Books, 2007).
[127] Alexandra Minna Stern, "Sterilized in the Name of Public Health: Race, Immigration, and Reproductive Control in Modern California," *The American Journal of Public Health* 95, iss. 7 (July 2005), 1128-1138. See also Sandrine Piorkkowski Bocquillon, "Sterilization in the United States: The Dark Side of Contraception," *Revue de recherche en civilisation américaine*, December 17, 2018.
[128] Indiana General Assembly, "1907 Indiana Eugenics Law," wikisource.org. See also ed. Lombardo, *A Century of Eugenics in America.*

Buck v. Bell, the court ruling in favor of the involuntary sterilization of a mother and daughter; Holmes wrote, "Three generations of imbeciles are enough."[129] As devastating as this individual ruling was, it set a still worse precedent: anyone the state judged to be unfit for reproduction could be sterilized.[130] Eugenic furor in the United States only tamped down after the rise of the Nazis, who took eugenics to its logical conclusion and killed millions of "undesirables."[131] However, as late as 2010, California prison officials pressured women inmates into sterilization procedures.[132] Racial science and tape measure-enforced racial hierarchies are far from irrelevant to modern racism and state violence.

Even on an evaluation basis, the power discrepancy that likely existed between racial scientists and their subjects, particularly non-white, anthropologized individuals is also worthy of note. For subjects who were alive—not skeletons kept and measured under scientific auspices—the experience would have consisted of a steel tape snaking every which way around the skull and body until a conclusion is reached about one's fitness, one's worthiness as a specimen. The power that racial scientists wielded as supposedly all-knowing arbiters of true human worth not only gave them authority over subjects who were alive, but also over the remains of many who had not chosen to leave their bodies to scientific examination and almost certainly would have preferred a fate in

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[129] Adam Cohen, *Imbeciles: The Supreme Court, American Eugenics, and the Sterilization of Carrie Buck* (New York: Penguin Press, 2016), 2.
[130] Ibid, 9-11.
[131] Bruinius, 282-317.
[132] Corey Johnson, "California was sterilizing its female prisoners as late as 2010," *The Guardian*, November 8, 2013.

line with their cultural customs.[133] The very nature of scientific measurement and examination was one of domination, a privileging of white supremacist scientific endeavors over the wishes, traditions, and sovereignty of people of color.

[133] Chip Colwell, *Plundered Skulls and Stolen Spirits: Inside the Fight to Reclaim Native America's Culture* (Chicago: University of Chicago Press, 2017).

Chapter 3: American Men and the Tape Measure

Alternatively, precise, standardized measurement with the steel tape measure would prove a central mechanism of validation for many Americans in the late 19th and early 20th centuries. The use of tools like the tape measure could affirm one's supposed masculinity, femininity, racial fitness, and/or ability, assigning parts of the body objective numeric values that were loaded with subjective social implications. For example, when male bodybuilders took and compared measurements of their bodies, the implicit comparison was between their worth and capability as men. In this manner, the size of one's chest could serve as external proof of not only one's lung capacity and strength, but one's internal nature and masculinity.[134] In one instance in 1915, a man ended his life after trying and failing to expand the size of his chest, *The Los Angeles Times* printing, "With the tapeline [tape measure] still draped across his pathetic figure, [he] lay on the bed. In a half-minute he was dead."[135] In the first and second war registration drives for World War I, 29.1% of the 2.5 million registered found themselves in a similar plight, "rejected on medical (including mental) grounds."[136]

Latent fears over the physical stagnation of American men led nearly every state to pass laws instituting physical education in schools (or updating such programs when

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[134] David Waller, *The Perfect Man: The Muscular Life and Times of Eugen Sandow, Victorian Strongman* (Brighton: Victorian Secrets Limited, 2011), 66-67. See also Dave Day, "'Science,' 'Wind' and 'Bottom': Eighteenth Century Boxing Manuals," *The International Journal of the History of Sport* 29, iss. 10 (2012), 1446-1465.

[135] *The Los Angeles Times*, "Thirty-Two Inches: Tape-Measure Spells Death," December 17, 1915, II1.

[136] Bernard D. Karpinos and Albert J. Glass, "Appendix A: Disqualifications for Neuropsychiatric Reasons: World Wars I and II," U.S. Army Medical Department, history.amedd.army.mil.

extant) and otherwise promoting physical fitness.[137] The U.S. Army also expanded the number of vital statistics (i.e. measurements) it took of its recruits and demobilizing forces, building thousands of racially segmented data tables that collapsed variations within designated racial groups and suggested something deeper about the capabilities of certain races: "The chest girth of the Negro troops was relatively somewhat less than that of whites."[138]

The fixation on chest size and muscles as a measure of masculinity continued to gain popularity as strongmen became international stars in the late 1800s. Eugen Sandow, the most famous strongman of his generation, performed at the 1893 World's Fair in Chicago as "The Perfect Man."[139] In New York, on his way to Chicago, Sandow's act included "toy[ing] with fifty-six-pound dumbbells" before lifting "an immense dumbbell 9 feet long…[when] the bells at each end of the connecting bar were opened…two…young men were dragged out."[140] Feats such as these not only demonstrated the strength of individuals like Sandow, but suggested the strength and fitness of all white men. In a sense, strongmen like Sandow represented the enduring

[137] National Center for Biotechnology Information, "Evolution of School Health Programs," ncbi.nlm.nih.gov. See also Delbert Oberteuffer, "The Role of Physical Education in Health and Fitness," *The American Journal of Public Health* 52, no. 7 (July 1962), 1155-1160.
[138] Charles B. Davenport and Albert G. Love, *The Medical Department of the United States Army in the World War XV—Statistics* (Washington D.C.: Government Printing Office, 1921), 37.
[139] Waller, 89-98.
[140] *The New York Times*, "The 'Strong Man' Appears," June 12, 1893, 5.

potential of whites to win contests of strength between nations (wars) and engage in imperial domination of "lesser" races.[141]

Figure 4: Sandow poses as the Farnese Hercules (see figure 5).[142]

Sandow himself grew up surrounded by the Prussian military tradition that would prove so essential to Bismarck's creation and maintenance of a German empire (though

[141] John F. Kasson, *Houdini, Tarzan, and The Perfect Man: The White Male Body and The Challenge of Modernity in America* (New York: Hill and Wang, 2002). See also David Henry Burton, *Theodore Roosevelt: Confident Imperialist* (Philadelphia: University of Pennsylvania Press, 1969), 12-13.
[142] The H.J. Lutcher Stark Center for Physical Culture, "Sandow in Farnese Hercules Pose," rougefitness.com.

Sandow avoided military service).[143] Sandow did contend that anyone could be strong (including women and the elderly), within certain limits: "You can all be strong, all enjoy the heritage which was intended for you…[perhaps not] those who are afflicted with some hereditary disease."[144] On its face, Sandow's assertions contest the work of racial scientists, suggesting that one's physical condition was not merely a matter of biological destiny but instead of the work one put in to forge a body worthy of one's "heritage," which could be interpreted as one's genetic potential. While racial scientists may have considered the superiority of certain bodies and minds inevitable, Sandow presented his followers with a challenge—since the condition of one's body was dependent on physical training, on effort, then one had the obligation to put forth such effort. This sentiment of self-empowerment, even self-help, is still a defining feature of the bodybuilding community.[145] Sandow is otherwise more modern than one might expect in the inclusivity of his philosophy, traveling internationally for performances and inspiring strength and health movements in countries besides the United States and countries in Europe; the Sandow-inspired strength movement in India is particularly worthy of note.[146]

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[143] Hans-Ulrich Wehler, "Bismarck's Imperialism, 1862-1890," *Past & Present* 48 (August 1970), 119-155. See also Waller, 15-22.
[144] Eugen Sandow, *Strength and How to Obtain It, Revised Edition* (London: Galee & Polden, Ltd., 1905), vii.
[145] ed. Pamela L. Moore, *Building Bodies* (New Brunswick: Rutgers University Press, 1997).
[146] Carey A. Watt, "Cultural Exchange, Appropriation and Physical Culture: Strongman Eugen Sandow in Colonial India, 1904-1905," *The International Journal of the History of Sport* 33, iss. 16 (2016), 1921-1942.

Even if his words were intended for a broad audience, Sandow was nonetheless understood to be thoroughly white, newspaper accounts often taking care to describe his blue eyes, golden hair, and fair skin.[147] Sandow only added to "the effect [when he] shav[ed] his body hair to display his musculature," his skin appearing lighter in the absence of hair.[148] Sandow also fell squarely in a tradition of whiteness, looking to the ancient Greeks and Romans as many racial scientists did. Unlike many of the strongmen who proceeded him, Sandow specifically modeled his body after statues he saw in Italy as an adolescent.[149] While perhaps not as important to Sandow, the understanding of Greek statues as representations of white people that also happened to be recovered as white marbles statues—therefore representatively and actually white—likely only compounded early associations of bodybuilding with whiteness.

While Sandow did have predecessors who informed his training and created some public awareness of strength training and performance, Sandow is often credited as one the fathers of bodybuilding for adapting and selling techniques to a far broader audience than previous strongmen or bodybuilders.[150] Traditionally, most performing strongmen drew (and draw) their strength from their mass rather than a highly visual musculature.[151] Sandow was one of the first to build a body that had the musculature of an ancient Greek

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147 Kasson.
148 Ibid.
149 Michael Anton Budd, *The Sculpture Machine: Physical Culture and Body Politics in the Age of Empire* (London: MacMillan, 1997), 68.
150 David L. Chapman, *Sandow the Magnificent: Eugen Sandow and the Beginnings of Bodybuilding* (Chicago: University of Illinois Press, 1994).
151 Waller, 11. See also Robert Kahn, "These Historic Strongmen Could Bend a Frying Pan and Lift an Elephant," *history.com*, June 21, 2019. See also *BBC News*, "What is life like as a 'strongman?'", August 7, 2013.

statue, creating a new visual vocabulary for what strength looked like. Still today, bodybuilder competitions rely on visual musculature and symmetry rather than actual demonstrations of strength while strongman competitions focus on competitive displays of strength.[152]

In his time, Sandow swiftly became a spokesman for a growing movement of men reclaiming their masculinity by revitalizing the physical culture of the ancient Greeks and Romans.[153] The tradition of physical culture and activity that loomed so large in ancient Greece had largely disappeared after the fall of the Roman empire and the rise of Christianity.[154] There are many reasons for this, including the desire of Christians to separate themselves from Roman paganism.[155] This distancing entailed Christian authorities "de-emphasiz[ing] the body, largely abolish[ing] athletic competitions, and encourage[ing] men and women to live pious, reflective lives instead."[156] It was only in the Renaissance that the rediscovery of other elements of Greek and Roman culture prompted the recovery and preservation of Greek meditations on physical culture and the

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[152] Tom Miller, "Reasons Why Bodybuilders Build More Muscle Mass Than Powerlifters," *fitnessvolt.com*, February 15, 2019. See also Old School Blog, "Powerlifting vs. Bodybuilding: What are the Differences?", *oldschoollabs.com*, May 29, 2019.

[153] Waller, 127-133. For the pre-Sandow Greek revival, see Jan Todd, "The Classical Ideal and Its Impact on the Search for Suitable Exercise: 1774-1830," *Iron Game History* 2, no. 4 (November 1992), 6-7.

[154] For context about what happened to Greek writings and how they were preserved, see P.C. McIntosh, "Hieronymus Mercurialis 'De Arte Gymnastica': Classification and Dogma in Phyiscal Education in the Sixteenth Century," *The British Journal of Sports History* 1, no. 1, 74.

[155] Jan Todd, "'As Men Do Walk A Mile, Women Should Talk An Hour…Tis Their Exercise' & Other Pre-Enlightenment Thought on Women and Purposive Training," *Iron Game History* 7, no. 2 & 3 (July 2002), 62.

[156] Todd, "As Men Do Walk A Mile," 62; Todd cites Edith L. Hildebrandt, "The Historical Aspect of Physical Education," *Mind and Body* 26 (April 1919).

publication of new books that suggested how one could safely and effectively train the human body.[157]

Figure 5: The Farnese Hercules.[158]

The rediscovery of the Farnese Hercules would prove to be instrumental in this rekindling of interest in physical culture; as more and more statues were excavated, more and more privileged white men in a position to see those statues began to ask themselves why their bodies did not look like the bodies of the ancient Greeks and Romans they so lauded for their brilliant and "civilized" minds.[159] One of the first iterations of racial science even involved measuring the facial angles of Greek statues and comparing them

[157] The most prominent example, published throughout Europe and reprinted for hundreds of years: Hieronymus Mercurialis, *De Arte Gymnastica* (Venice, 1569).
[158] University of Cambridge, "Farnese Herakles," Museum of Classical Archaeology Databases, museum.clasics.cam.ac.uk.
[159] Jan Todd, "The History of Cardinal Farnese's 'Weary Hercules,'" *Iron Game History* 9, no.1 (August 2005).

to different races, naturally concluding that white races were the most like the statues and therefore the least primitive and most beautiful.[160] That said, there were many who disagreed with the Farnese Hercules as a masculine ideal and who thought bodybuilders built too much muscle to represent a masculine ideal.[161] Concerns about strength training and particularly the myth of muscle-bound lifters as slow and inflexible persisted well into the twentieth century.[162]

Sandow and others peddling the potential for masculine metamorphosis did nonetheless benefit from not only from the vaulted lineage of their strength and musculature, but also from contemporary fears about the deterioration of white men engaged in factory labor and unhealthy city living. The performative strength of Sandow in particular worked so well because it came with an implicit promise—by following Sandow's advice and buying his products, anyone could improve themselves and reach the maximum potential of their hereditary, perhaps even becoming as strong as Sandow.[163] In *Strength and How to Obtain It* (1897), Sandow set out specific workout plans based on age and gender; these workout plans relied on daily workouts with dumbbells that gradually increased in weight—"On the completion of the seventh or eighth course, with the dumb-bells weighing twenty pounds, I guarantee that my pupils

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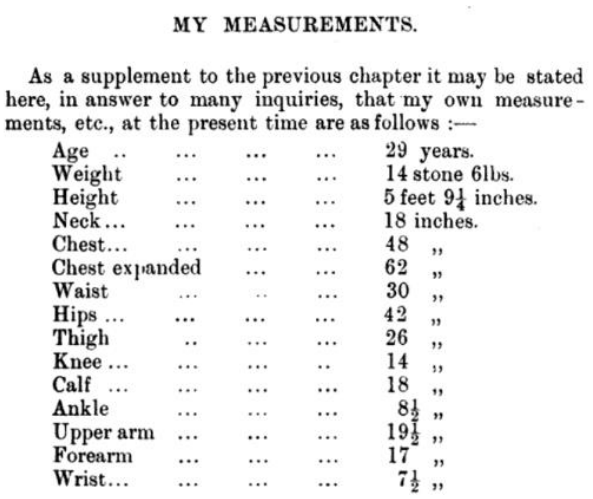
[160] Michael R. Lynn, "Review: Race and Aesthetics in the Anthropology of Petrus Camper (1722-1789)," *Journal of the History of Medicine and Allied Sciences* 57, no.2 (April 2002), 228. See also *American Phrenological Journal,* "Faces in Profile: Facial Angles," *American Phrenological Journal 40*, iss. 6 (December 1864), 169-170.
[161] Todd, The History of Cardinal Farnese's 'Weary Hercules," 33.
[162] Terry Todd, "The myth of the muscle-bound lifter," *National Strength and Conditioning Association Journal* 7, iss. 3 (June 1985), 37-41.
[163] Eugen Sandow, *Strength and How to Obtain It* (London: Gale & Polden Ltd., 1897), 26, 33.

will be as muscular as I am."[164] Sandow also included his measurements and left empty tables for readers to keep track of their measurements.[165] The performative strength of Sandow and others of his ilk also soothed contemporary concerns about the deterioration of white men engaged in factory labor and unhealthy city living.[166] All of these conditions laid the groundwork for the growth of bodybuilding as we know it today, with other leaders waiting in the wings with techniques and products of their own.[167]



MY MEASUREMENTS.

As a supplement to the previous chapter it may be stated here, in answer to many inquiries, that my own measurements, etc., at the present time are as follows :—

Age	29 years.
Weight	14 stone 6lbs.
Height	5 feet 9¼ inches.
Neck	18 inches.
Chest	48 ,,
Chest expanded	62 ,,
Waist	30 ,,
Hips	42 ,,
Thigh	26 ,,
Knee	14 ,,
Calf	18 ,,
Ankle	8½ ,,
Upper arm	19½ ,,
Forearm	17 ,,
Wrist	7½ ,,

Figure 6: Sandow's 1897 measurements.[168]

Dudley Allen Sargent, for example, was responsible for formalizing principles of athletic training into physical education curriculums that relied on mass participation,

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[164] Sandow, 20-26.
[165] Ibid, 29, 157.
[166] Warren Greene, "A child of three fathers: physical culture and the birth of the modern fitness magazine," Leigh University Dissertation, 2003. See also Waller, 146-169.
[167] Sam Danna, "The 97-Pound Weakling…who became 'The World's Most Perfectly Developed Man,'" *Iron Game History* 4, no. 4 (September 1996). See also John D. Fair, "Bob Hoffman, the York Barbell Company, and the Golden Age of American Weightlifting, 1945-1960," *Journal of Sport History* 14, no. 2 (Summer 1987).
[168] Sandow, 29, 157.

mass measurement, and the pursuit of healthy, fit Americans.[169] When Sargent "set up a hygienic institute in New York City" he pioneered a system "of more than fifty tests of size and strength of different parts of the body, conducted with tape measures…and other devices."[170] Sargent went on to build up and run the physical education department at Harvard University, ultimately recording and preserving over forty years of measurement data about Harvard students.[171] The rise of anthropometry (the measurement of human beings) as an important means to monitor health and as a tool for physical educators can largely be contributed to the pioneering work of Dudley Allen Sargent.[172]

The movement towards weightlifting and bodybuilding found itself buoyed by the rise of Muscular Christianity, which cast Christian men as duty-bound to build hygienic, healthy bodies for themselves that would best allow them to carry God's word and act in God's service on Earth.[173] In 1844, proponents of Muscular Christianity founded the YMCA (Young Men's Christian Association) and began to open exercise facilities as "a safeguard against the allurement of objectionable places of resort."[174] In 1869, the first American YMCA facilities opened in San Francisco, New York, and Washington D.C.,

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[169] Carolyn de la Peña, "Dudley Allen Sargent: Health Machines and the Energized Male Body," *Iron Game History* 8, no. 2 (October 2003), 3-19.
[170] Heather Munro Prescott, *Student Bodies: The Influence of Student Health Services in American Society & Medicine* (Ann Arbor: The University of Michigan Press, 2007), 19.
[171] Peña, 7.
[172] Dudley Allen Sargent, *Anthropometric Apparatus with Directions for Measuring and Testing the Principal Physical Characteristics of the Human Body, Second Edition* (Cambridge, Massachusetts: Harvard University, 1887).
[173] G. Stanley Hall, "Christianity and Physical Culture," *The Pedagogical Seminary* 9, iss. 3 (1902), 374-378.
[174] Quote is found in Steven A. Riess, *Sport in Industrial America, 1850-1920, Second Edition* (Oxford: Wiley-Blackwell, 2013).

bolstering Muscular Christianity in the United States.[175] British and American proponents of Muscular Christianity alike often envisioned that the development of physical prowess and mental grit would prepare youth for future warfare, particularly imperial deployments that would call on them to act as soldiers as well as missionaries of Christianity and civilization.[176]

This is nowhere better embodied than in the youth, military career, and presidency of Theodore Roosevelt, a Muscular Christian devotee.[177] As a child, Roosevelt had bouts of asthma that made it difficult for him to be as active as his father and siblings; as a teenager he sought to remedy his physical underdevelopment with sports like football.[178] Some years later, Roosevelt would ultimately step in to rewrite the rules of football to make it safer while preserving the ability of the game to harden "overcivilized" Ivy Leaguers who would be the leaders and administrators of American empire.[179] Roosevelt considered the lessons of football valuable life philosophies: "Don't flinch, don't foul, hit the line hard."[180] In adulthood, Roosevelt built a reputation for uncompromising toughness, his masculinity grounded in sporting culture and imperial conquest.[181]

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[175] Emmett A. Rice, *A Brief History of Physical Education* (New York: A.S. Barnes and Company, 1935), 192.
[176] Clifford Putney, *Muscular Christianity: Manhood and Sports in Protestant America 1880-1920,* (Cambridge, MA: Harvard University Press, 2001), 127-143. See also James George Cotton Minchin, *Our Public Schools: Their Influence on English History* (London: Swansonnenschein & Co, Limited, 1901), 8.
[177] Kathleen Dalton, *Theodore Roosevelt: A Strenuous Life* (New York: Knopf, 2002), 18-20, 62-65.
[178] Ibid, 38-61. See also John J. Miller, *The Big Scrum: How Teddy Roosevelt Saved Football* (New York: HarperCollins, 2011), 5-8.
[179] Greg Volk, "The Time Teddy Roosevelt Saved Football," *mentalfloss.com,* December 1, 2012. See also Gordon J. Christen, "Roosevelt, Boy Scouts, and the Formation of the Muscular Christian Character," *Macalester College Religious Studies Honors Projects* (2014).
[180] *Letter from Theodore Roosevelt to Leslie M. Hagen,* Theodore Roosevelt Papers, Library of Congress Manuscript Division.
[181] Dalton.

Roosevelt's foray in Cuba with his volunteer Rough Riders was a direct manifestation of contemporary understandings of masculinity and race as they were informed by the rise of measurement-based racial science and physical culture.

Conclusion

Considering all of the history discussed in this paper, the tape measure can be understood as a haunted object. I mean this in two senses: in terms of hauntology, with the tape measure serving as an inert, largely obsolete artifact of violent regimes of measurement and standardization with a legacy that continues today, but also as a physical, operative tool with rituals carried and reproduced within the family that belie its darker history. Many American children encounter the tape measure throughout their childhood as they put their backs to doorframes or walls, the ritual often repeated as a point of comparison, to provide visual and numeric proof that a child is growing. This objective visual proof (as the child looks back to see the penciled mark) and numeric proof are placed within the similar social scripts and maps of meaning as measurements taken in the late 1800s and early 1900s; growth, size, and proportion often taken as indicators of health and fitness, of normative development that carries social cachet.

As an object, the tape measure allows us to consider how the lauded objectivism of hard numbers and science are often turned to subjective ends that reinforce existing prejudices. Racial scientists, bodybuilders, starlets, and many millions of other Americans used and continue to use measurement as a means of validating their self-worth and chasing the prospect of self-improvement. But there is certainly something lost in this scramble towards the standardization of the human body, this slouch towards numerically bound beauty standards and normative size. The individual as necessarily lost at some point, every numeric measurement of one's body carrying meaning only in comparison to the measurements of others. The tape measure is still a tool that

dehumanizes, but it does so now to willing subjects, passing judgement not on their worthiness for life, but on how well they accord to medicalized and aesthetic norms.

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